

Listing of Claims:

Claims 1-3 (cancelled)

Claim 4 (currently amended): ~~The adsorbent filter material according to claim 1,~~ An adsorbent filter material useful for removing a solute from a fluid, comprising:

a liquid permeable fibrous support material comprising fibers having hydroxyl groups, hydrolyzable alkoxyl groups, amino groups, or sulfhydryl groups;

an adsorbent porous inorganic gel coating on the fibrous support material, wherein the inorganic gel coating has been molecularly imprinted for the solute using template molecules present during formation of the inorganic gel coating but selectively removed thereafter from the filter material, wherein the fibrous support material comprises cellulose having a lignin content of less than 1.0 percent.

Claims 5-7 cancelled

Claim 8 (currently amended): ~~The adsorbent filter material according to claim 1,~~ An adsorbent filter material useful for removing a solute from a fluid, comprising:

a liquid permeable fibrous support material comprising fibers having hydroxyl groups, hydrolyzable alkoxyl groups, amino groups, or sulfhydryl groups;

an adsorbent porous inorganic gel coating on the fibrous support material, wherein the inorganic gel coating has been molecularly imprinted for the solute using template molecules present during formation of the inorganic gel coating but

selectively removed thereafter from the filter material,
wherein the molecular imprinting comprises alterations to the inorganic gel coating imparted by the presence of caffeine as template molecules during formation of the inorganic gel coating, and subsequent removal of the template molecules while leaving the inorganic gel coating anchored in place to the fibrous support material.

Claim 9 (cancelled)

Claim 10 (currently amended): A method of making an adsorbent filter material useful for removing a solute from a fluid, comprising:

contacting a fibrous material comprising fibers having hydroxyl groups or hydrolyzable alkoxyl groups with a fluid containing a base that dissociates in water to generate hydroxyl ions to provide a fibrous support material comprising surface-treated fibers;

combining the fibrous support material with a sol gel precursor, a gel formation solvent, and template molecules, with mixing;

forming an inorganic gel coating on the surface-treated fibers, including molecularly imprinting the solute on the inorganic gel coating with the template molecules present during formation of the inorganic gel coating;

selectively removing the template molecules from the gel coating by washing the gel coating with a solvent that selectively removes the template molecules to provide a composite MIP filter material, ~~wherein the molecularly imprinted inorganic gel coating is more effective in removing~~

~~the solute from a fluid relative to an inorganic gel coating that has not been molecularly imprinted with the template molecule, where both filtrations are performed under similar conditions.~~

Claim 11 (original): The method of claim 10, comprising selecting the fibrous support material from the group consisting of cellulose, methylcellulose, cellulose acetate fiber, chitosan, alginate, polylactic acid, nylon, polyamine, polyamide, polysulfone, polydextrine, and combinations thereof.

Claim 12 (currently amended): ~~The adsorbent filter material according to claim 1,~~ An adsorbent filter material useful for removing a solute from a fluid, comprising:

a liquid permeable fibrous support material comprising fibers having hydroxyl groups, hydrolyzable alkoxyl groups, amino groups, or sulfhydryl groups;

an adsorbent porous inorganic gel coating on the fibrous support material, wherein the inorganic gel coating has been molecularly imprinted for the solute using template molecules present during formation of the inorganic gel coating but selectively removed thereafter from the filter material,
wherein ~~comprising~~ ~~selecting~~ the inorganic gel coating comprises a gel structure comprising a metal or metalloid comprising metal selected from the group consisting of silicon, aluminum, titanium, zirconium, and vanadium.

Claim 13 (currently amended): A method of making an adsorbent filter useful for removing a solute from a fluid, comprising:

contacting cellulose fibers with a fluid containing a base that dissociates in water to generate hydroxyl ions to provide a fibrous support material comprising surface-treated cellulose fibers;

impregnating the surface-treated cellulose fibers with an organic solution;

combining the impregnated cellulose fibers with a sol gel precursor and template-molecules, with mixing;

forming an inorganic gel coating on the surface-treated cellulose, including molecularly imprinting the solute on the inorganic gel coating with the template molecules present during formation of the inorganic gel coating;

selectively removing the template molecules from the gel coating by washing the inorganic gel coating with a solvent for the template molecules to provide a composite MIP filter material, ~~wherein the molecularly imprinted inorganic gel coating is more effective in removing the solute from a fluid relative to an inorganic gel coating that has not been molecularly imprinted with the template molecule, where both filtrations are performed under similar conditions.~~

Claim 14 (original): The method according to claim 13, wherein the inorganic gel coating forming comprises forming a sol gel with a gel precursor selected from a metal or metalloid in which the metal component is selected from the group consisting of silicon, aluminum, titanium, zirconium, and vanadium.

Claim 15 (original): The method according to claim 13, wherein the inorganic gel coating forming comprises forming a sol gel

with a gel precursor comprising a silicon alkoxide.

Claim 16 (original): The method according to claim 13, wherein the cellulose fiber is selected as having a lignin content of less than 1 percent.

Claim 17 (original): The method according to claim 13, wherein the template molecule is selected from the group consisting of caffeine, cholesterol, lipid, sugar, and organocidal compounds.

Claim 18 (original): The method according to claim 13, further comprising compressing the MIP composite material into a self-supporting unitary shape.

Claim 19 (cancelled)

Claim 20 (currently amended): ~~The method according to claim 19,~~ A method for filtering a solute from a fluid, comprising:

providing an adsorbent filter material, wherein the filter material comprises a liquid permeable fibrous support material comprising fibers having hydroxyl groups or hydrolyzable alkoxyl groups, and an adsorbent porous inorganic gel coating on the fibrous support material, wherein the inorganic gel coating has been molecularly imprinted for the solute using template molecules present during formation of the inorganic gel coating but selectively removed thereafter from the filter material; and

passing a fluid containing a solute through the adsorbent filter effective to retain at least a portion of the solute in

the filter material, wherein the inorganic gel coating comprises silica, and the fibrous support material comprises cellulose.

Claim 21 (currently amended): ~~The method according to claim 19,~~ A method for filtering a solute from a fluid, comprising:

providing an adsorbent filter material, wherein the filter material comprises a liquid permeable fibrous support material comprising fibers having hydroxyl groups or hydrolyzable alkoxy groups, and an adsorbent porous inorganic gel coating on the fibrous support material, wherein the inorganic gel coating has been molecularly imprinted for the solute using template molecules present during formation of the inorganic gel coating but selectively removed thereafter from the filter material; and

passing a fluid containing a solute through the adsorbent filter effective to retain at least a portion of the solute in the filter material, wherein the fluid comprises a caffeinated fluid and the solute comprises caffeine.

Claim 22 (currently amended): The method according to claim 21 ~~19~~, wherein the solute comprises caffeine, and the fluid comprises a caffeinated fluid selected from coffee, tea, cola or carbonated soda drink.

Claim 23 (currently amended): ~~The method according to claim 19,~~ A method for filtering a solute from a fluid, comprising:

providing an adsorbent filter material, wherein the filter material comprises a liquid permeable fibrous support material comprising fibers having hydroxyl groups or

hydrolyzable alkoxyl groups, and an adsorbent porous inorganic gel coating on the fibrous support material, wherein the inorganic gel coating has been molecularly imprinted for the solute using template molecules present during formation of the inorganic gel coating but selectively removed thereafter from the filter material; and

passing a fluid containing a solute through the adsorbent filter effective to retain at least a portion of the solute in the filter material, wherein the fluid comprises a lipid-containing material in a flowable state and the solute comprises cholesterol.

Claim 24 (currently amended): The method according to claim 23 ~~19~~, wherein the solute comprises cholesterol, and the fluid comprises a lipid-containing material selected from egg yolk, butter fat, beef tallow, and fish oil.

Claim 25 (currently amended): ~~The method according to claim 19,~~ A method for filtering a solute from a fluid, comprising:

providing an adsorbent filter material, wherein the filter material comprises a liquid permeable fibrous support material comprising fibers having hydroxyl groups or hydrolyzable alkoxyl groups, and an adsorbent porous inorganic gel coating on the fibrous support material, wherein the inorganic gel coating has been molecularly imprinted for the solute using template molecules present during formation of the inorganic gel coating but selectively removed thereafter from the filter material; and

passing a fluid containing a solute through the adsorbent filter effective to retain at least a portion of the solute in

the filter material, wherein the fluid comprises water and the solute comprises an organic compound selected from a pesticide and a herbicide.

Claim 26 (currently amended): ~~The method according to claim 19,~~ A method for filtering a solute from a fluid, comprising:

providing an adsorbent filter material, wherein the filter material comprises a liquid permeable fibrous support material comprising fibers having hydroxyl groups or hydrolyzable alkoxy groups, and an adsorbent porous inorganic gel coating on the fibrous support material, wherein the inorganic gel coating has been molecularly imprinted for the solute using template molecules present during formation of the inorganic gel coating but selectively removed thereafter from the filter material; and

passing a fluid containing a solute through the adsorbent filter effective to retain at least a portion of the solute in the filter material, wherein the fluid comprises a natural food matrix in a flowable state and the solute comprises a sugar.

Claim 27 (currently amended): ~~The method according to claim 19,~~ A method for filtering a solute from a fluid, comprising:

providing an adsorbent filter material, wherein the filter material comprises a liquid permeable fibrous support material comprising fibers having hydroxyl groups or hydrolyzable alkoxy groups, and an adsorbent porous inorganic gel coating on the fibrous support material, wherein the inorganic gel coating has been molecularly imprinted for the solute using template molecules present during formation of

the inorganic gel coating but selectively removed thereafter from the filter material; and

passing a fluid containing a solute through the adsorbent filter effective to retain at least a portion of the solute in the filter material, wherein the fluid comprises a food lipid or an oxidized food lipid in a flowable state, and the solute is selected from an aldehyde and a ketone.